REMARKS

Claims 27-38 are all the claims pending in the application. By this Amendment, Applicants amend claim 27 to correct a minor grammatical error. Since the amendment does not require any further search and/or consideration, Applicants respectfully request entry of this amendment.

Finality is premature

As an initial matter, Applicants respectfully submit that the finality of the current Office Action is premature. For example, the Examiner has objected to the Specification. See Office Action, page 2. This objection to the Specification could have previously been made. There was no amendment to the claims in the previous Amendment that necessitated this objection. As such, raising the objection now on a final basis is prejudicial to Applicants. Accordingly, Applicants respectfully request withdrawal of the improper finality of the Office Action.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 37 and 38 would be allowable if rewritten in independent form, if the 35 U.S.C. § 101 thereto rejection is overcome. As discussed below, claims 37 and 38 comply with the requirements of 35 U.S.C. § 101.

However, Applicants respectfully request the Examiner to hold in abeyance rewriting these claims in independent form until the Examiner has had an opportunity to reconsider and withdraw the prior art rejection of the other claims, as discussed below.

Specification Objection

As noted above, the Specification is objected to for allegedly failing to provide proper antecedent basis for the claimed computer readable medium. See Office Action, page 2. Applicants respectfully disagree.

For example, the Specification does provide support for the claimed computer readable medium in the paragraph starting on page 23, line 18. Specifically, lines 22-23 of page 23 disclose that "the program can be stored in a computer-readable recording medium". Accordingly, withdrawal of this objection is respectfully requested.

Claim Rejections – 35 U.S.C. § 101

Claims 27-38 are rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. In view of the amendments to the Specification being made herein, Applicants respectfully submit that the claims comply with the requirements of 35 U.S.C. § 101.

Claim Rejections – 35 U.S.C. § 103

Claims 27, 28, and 30 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the teachings of the Applicants' admitted prior art ("AAPA") in view of U.S. Patent No. 6,275,532 to Hibi *et al.* ("Hibi").

For *at least* the following reasons, Applicants respectfully traverse the rejection.

For example, in the previous Amendment filed March 6, 2008, it was submitted that claim 27 is patentable over the proposed combination of the AAPA and Hibi. Claim 27 relates to a computer readable medium storing a computer program for causing a computer to implement functions of coding a motion vector. The functions comprise, *inter alia*, performing an affine motion estimation to obtain affine motion parameters, and converting the affine motion parameters to a predetermined number of translational motion vectors. The Examiner asserted in

the last Office Action dated December 6, 2007 that the AAPA, on page 2, lines 8-11, and page 2, line 19 to page 3, line 13 teaches these features. In the previous Amendment, Applicants disagreed with this assertion.

In particular, it was submitted that the conventional motion estimation methods disclosed in the AAPA do not suggest the above-noted features of claim 1. For example, there is no conversion of the affine motion parameters to a predetermined number of translational motion vectors in the conventional motion estimation methods disclosed in the AAPA as alleged by the Examiner.

On the contrary, the AAPA states that in the translational motion model used by standards such as H.261, H.263, MPEG-1, and MPEG-2, "the motion vectors of all pixels in a block are fixed as one vector. However, in the case of affine motion, as expressed in Equations (1a) and (1b), a motion vector with respect to each pixel location is variable" (Specification, page 3, line 4-10). That is, in the conventional motion estimation methods disclosed in the Specification, the affine motion estimation and the translational motion model are separate methods to estimate motion, and are independent of each other. There is no conversion between the two models.

The AAPA further discloses that since the affine motion parameters are not affected by neighboring blocks, it is very difficult to predictively encode motion information as employed in the translation motion model, which relies on motion vectors which are predictively encoded (Specification, page 6, lines 9-19). The present invention mitigates these deficiencies by providing a method to convert the affine motion parameters to a predetermined number of translational motion vectors, as claimed.

In response, the Examiner states that "[w]hile the applicant's points are understood, the examiner respectfully disagrees. See for example the AAPA page 2, lines 8-20. There Yoo discloses performing affine motion estimation to obtain affine motion parameters. Yoo further discloses on page 3, lines 4-13 and page 5, lines 1-15, converting the parameters to motion vectors. Therefore the rejection has been maintained" (Office Action, page 2). Applicants respectfully disagree and submit that the teachings of the AAPA are being misinterpreted in the Office Action.

For instance, as was already shown in the previous Amendment, and as discussed above, page 3, lines 4-13 of the Specification discloses that in the translational motion model, "the motion vectors of all pixels in a block are fixed as one vector. However, in the case of affine motion, as expressed in Equations (1a) and (1b), a motion vector with respect to each pixel location is variable" (Specification, page 3, line 4-10, emphasis added). There is no conversion of the affine motion parameters to translational motion vectors disclosed or suggested in this portion of the Specification. Rather, the AAPA discusses these two different motion estimation methods as being applied independently in conventional coding schemes. That is, the AAPA does not even remotely suggest that the affine motion parameters are converted to any motion vectors, let alone a predetermined number of translational motion vectors as required by claim 27. Instead, the affine motion parameters are used to obtain motion magnitude components of individual pixels in the affine motion estimation, as shown in equations (1a) and (1b). No translational motion vectors are taught or suggested in this portion of the AAPA.

With respect to page 5, lines 1-15, Applicants respectfully submit that this portion of the AAPA discloses a differential motion estimation method to determine affine motion parameters, not translational motion vectors. For example, page 5, lines 1-3 of the AAPA disclose that "[t]he

method of estimating affine motion parameters shown in Equations 4 through 9a and 9b is called a differential motion estimation method" (emphasis added). The remaining lines of the cited portion discuss the equations 4 though 9(b) in further detail, and also do not disclose or suggest any conversion of the estimated affine motion parameters to translation motion vectors.

For instance, on page 5, lines 5-9, it is disclosed that "for affine motion estimation, first, the iteration coefficient l is set to "0" and the square error is set at a maximum as possible. Next, the value obtained from Equation (6) is updated using Equations 6 through 9a and 9b, and then the updated value is substituted into Equation (4) to thereby obtain a_k^{l+1}", which is an affine motion parameter. Using this obtained affine motion parameter and equation 10, the difference between the present block and the motion-compensated previous block is obtained (AAPA, page 5, lines 9-15). That is, a motion magnitude component for a subject pixel is determined in this affine motion estimation method using the obtained affine motion parameter, but this obtained affine motion parameter or the motion magnitude component is never converted to a translational motion vector, contrary to the Examiner's assertions.

Therefore, Applicants respectfully submit that the conventional motion estimation methods disclosed in the AAPA do not disclose or suggest converting the affine motion parameters to translational motion vectors, much less converting the affine motion parameters to a predetermined number of translational motion vectors. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claim 27.

Claim 28 recites a computer readable medium storing a computer program for causing a computer to implement functions of coding a motion vector, said functions comprising, *inter alia*, converting the affine motion parameters to a predetermined number of translational motion

vectors. Therefore, Applicants respectfully submit that claim 28 is patentable for reasons similar to those given above with respect to claim 27.

Claim 30 recites a computer readable medium storing a computer program for causing a computer to implement functions of decoding a motion vector, said functions comprising, *inter alia*, converting obtained translational motion vectors to affine motion parameters. The Examiner contends that the decoder of the combination of the instant application and Hibi will perform the complimentary operations of the corresponding encoder. Applicants respectfully disagree.

Specifically, since it has been shown above with respect to claim 27 that the encoder resulting from the proposed combination of the instant application and Hibi does not convert the affine motion parameters to a predetermined number of translational motion vectors, the complimentary operations of the corresponding decoder cannot disclose or suggest converting obtained translational motion vectors to affine motion parameters. Therefore, Applicants respectfully submit that claim 30 is patentable over the AAPA and Hibi.

Claims 29 and 31-36 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the teachings of the instant application and Hibi, and further in view of U.S. Patent No. 6,944,227 to Bober. For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claims 29 and 31-36 depend from claims 27, 28, and 30. Since Bober does not cure the deficient teachings of the conventional motion estimation methods disclosed in the AAPA and Hibi with respect to claims 27, 28, and 30, Applicants respectfully submit that claims 29 and 31-36 are patentable *at least* by virtue of their dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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